

Multicast Receivers

Who listens to multicast addresses?

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Multicast addressing is used as an integral part of networking support in the front-ends. This note describes how to determine which nodes are listening to which IP multicast addresses.

The PAGEECHO client program was modified to permit entering an IP multicast address target. It can work for both ICMP ping testing as well as for UDP Echo testing, although success using the latter test requires that target nodes have been configured with LOOPECHO installed and enabled.

The test page can only count up the responses when the multicast ping, say, is issued; it does not identify which nodes responded. But this information can be obtained via the PAGENETF program to capture the recent network datagram activity. With the friendly node number refinement recently added, the resulting listing is easy to interpret.

The multicast addresses to which the front-ends can transmit are in the range:

239.128.2.240 – 239.128.2.254,

or in hexadecimal:

83E102F0 – 83E102FE

They correspond to the node numbers in the range:

09F0 – 09FE.

As an experiment, each IP multicast address was tried to see which nodes replied. Here are the counts of each address and the associated project for those nodes:

<i>Node#</i>	<i>Count</i>	<i>Project</i>	<i>Typical node range</i>
09F0	0	—	
09F1	2	testing	
09F2	0	—	
09F3	10	Tevatron HLRF	0631–063A
09F4	2	Electron lens	067D–067E
09F5	5	MiniBooNE	0640–0645
09F6	0	—	
09F7	2	testing	
09F8	15	Electron Cooling	0581–058E, 0595, 05E8, 05E9
09F9	142	(All nodes)	05xx, 06xx, 07xx
09FA	11	Photo-injector at A0	056B–056C, 0599, 05A0–05AE
09FB	32	Booster HLRF	06B1–06CF
09FC	49	Linac	0600–062F, 0721–0728
09FD	23	Main Injector HLRF	06D1–06E7
09FE	6	testing	

Node 09F9 deserves special attention, as it is the one corresponding to a multicast address to which all front ends listen. Testing was done from node0509, which is a 68040-based IRM. The ethernet support in the IRM uses a circular queue of 85 frame buffers. With 142 responses, the network is able to deliver them into the 1500-byte buffers faster than the software can keep up, with the observed result that apparent multiple replies from some nodes occur. They are really from different nodes, but but they used the same buffer. So the IRM code cannot properly handle more than about 80 datagrams occurring at once. Note that only target node 09F9 causes trouble.